

CLAIMS

1. An apparatus for adapting web page content for display on an intended display device, comprising adaptation means for splitting the content into a plurality of smaller web
5 pages for display on said device, the adaptation means being arranged in use to:
 - (i) split the content into a plurality of content portions, and to iteratively repeat steps
 - (ii) to (vi) for at least one of the content portions:
 - (ii) analyse the content to determine whether the size of the content portion is
suitable for display on said device;
 - 10 (iii) if the size of the content portion is not suitable for display on said device, then
apply at least one content transformation to the content portion;
 - (iv) analyse the transformed content to determine whether the size of the
transformed content portion is suitable for display on said device; and
 - (vi) if the size of the transformed content portion is not suitable for display on said
15 device then split the content portion into a plurality of further content portions.
2. Apparatus according to claim 1, wherein analysis steps (ii) and (iv) to determine
whether the size is suitable comprise determining whether the content is small enough for
display on said device.
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3. Apparatus according to claim 1 or 2, wherein the adaptation means is further
arranged in use to:
 - in the event that step (iv) determines that the transformed content portion is small
enough for display on said display device, then
 - 25 combine the transformed content portion with a further content portion to form a
combined content portion;
4. Apparatus according to claim 3, wherein the adaptation means is further arranged in
use to:
 - 30 analyse the content to determine whether the size of the combined content portion is
suitable for display on said device, and if the size of the combined content portion is too
large for said device then apply at least one content transformation to the combined content
portion.

5. Apparatus according to claim 4 when dependent on claim 3, wherein the adaptation means comprising a store for content portions, and wherein said step of combining two content portions comprises selecting the further content portion from the store, the adaptation means being further arranged to:
- 5 analyse the content to determine whether the size of the transformed combined content portion is suitable for display on said device, and if the size of the transformed combined content portion is too large for said device then break up said combined content portion so as to return the further content portion back into said store.
- 10 6. Apparatus according to claim 5, wherein the adaptation means is further arranged to:
- if the size of the transformed combined content portion is small enough for display on said device then combine it with a second content portion.
- 15 7. Apparatus according to any preceding claim, further comprising analysis means arranged in use to translate the web page content into a hierarchical tree format comprising a plurality of nodes labelled so as to represent suitable locations for splitting the content into smaller web pages.
- 20 8. Apparatus according to any preceding claim, wherein the adaptation means further comprises a store for content portions, and wherein said steps of splitting content to form smaller content portions comprises adding a plurality of content portions into the store.
9. Apparatus according to any preceding claim, wherein the adaptation means
- 25 comprises:
- a transformations store for storing a record of transformations which have been applied to content together with an indication of the type of content those transformations have been applied to.
- 30 10. Apparatus according to claim 9 when dependent upon claim 3, wherein the step of combining the content portions as defined in claim 3 further comprises:
- applying content transformations according to the record of transformations to the further content portion so as to consistently apply transformations to the same type of content as indicated in the record of transformations.

11. A method for adapting web page content for display on an intended display device, comprising splitting the content into a plurality of smaller web pages for display on said device by performing the following steps:

(i) splitting the content into a plurality of content portions, and iteratively repeating
5 steps (ii) to (vi) for at least one of the content portions:

(ii) analysing the content to determine whether the size of the content portion is suitable for display on said device;

(iii) if the size of the content portion is not suitable for display on said device, then applying at least one content transformation to the content portion;

10 (iv) analysing the transformed content to determine whether the size of the transformed content portion is suitable for display on said device; and

(vi) if the size of the transformed content portion is not suitable for display on said device then splitting the content portion into a plurality of further content portions.

15 12. A method according to claim 11, wherein analysis steps (ii) and (iv) to determine whether the size is suitable comprise determining whether the content is small enough for display on said device.

13. A method according to claim 11 or 12, further comprising the step of:

20 in the event that step (iv) determines that the transformed content portion is small enough for display on said display device, then

combining the transformed content portion with a further content portion to form a combined content portion;

25 14. A method according to claim 13, further comprising the steps of:

analysing the content to determine whether the size of the combined content portion is suitable for display on said device, and if the size of the combined content portion is too large for said device then applying at least one content transformation to the combined content portion.

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15. A method according to 14 when dependent on claim 13, wherein said step of combining two content portions comprises selecting the further content portion from a store, and further comprising the steps of::

35 analysing the content to determine whether the size of the transformed combined content portion is suitable for display on said device, and if the size of the transformed

combined content portion is too large for said device then breaking up said combined content portion and returning the further content portion back into said store.

16. A method according to claim 15, further comprising the step of:
5 if the size of the transformed combined content portion is small enough for display on said device then combining it with a second content portion.
17. A method according to any of claims 11 to 16, further comprising the step of:
translating the web page content into a hierarchical tree format comprising a plurality
10 of nodes labelled so as to represent suitable locations for splitting the content into smaller web pages.
18. A method according to any of claims 11 to 17, wherein said steps of splitting content to form smaller content portions comprises adding a plurality of content portions into a store.
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19. A method according to any of claims 11 to 18, further comprising:
maintaining a record of transformations which have been applied to content together with an indication of the type of content those transformations have been applied to.
- 20 20. A method according to claim 19 when dependent upon claim 13, wherein the step of combining the content portions as defined in claim 3 further comprises:
applying content transformations according to the record of transformations to the further content portion so as to consistently apply transformations to the same type of content as indicated in the record of transformations.
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21. An apparatus for adapting web page content for display on a device whose display is sufficiently smaller than the originally intended display size of the web page for the content of the web page to require splitting over a plurality of pages on the display of the device, the apparatus comprising:
30 means arranged to integrate the process of splitting the content with applying transformations by recursively splitting the content into smaller and smaller portions whilst simultaneously applying various transformations so as to minimise the amount of white space visible on the smaller pages.

22. An apparatus as claimed in claim 21, further comprising means arranged to track the transformations which have been applied to each smaller portion, wherein the apparatus further comprises means arranged to ensure consistency by applying the same transformations to any similar portions of the web-page content.

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23. A method for adapting web page content for display on a device whose display is sufficiently smaller than the originally intended display size of the web page for the content of the web page to require splitting over a plurality of pages on the display of the device, the method comprising the steps of:

10 recursively splitting the content of the web-page into a plurality of smaller portions of a first predetermined size;

 applying a transformation to said plurality of smaller portions, wherein the step of splitting the content is integrated with the step of applying transformations by recursively splitting the content into smaller and smaller portions whilst simultaneously applying various

15 transformations so as to minimise the amount of white space visible on the smaller pages.

24. A method as claimed in claim 23, further comprising the steps of:

 tracking each transformation applied to each portion, and

 storing information on all the transformations applied to each portion, and

20 applying the same transformations to any similar portions of the web-page content.

A computer program or suite of programs so arranged such that when executed by a computer system it/they cause/s the system to perform the method of any of claims 11 to 20, 23 or 24.

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A modulated carrier signal incorporating data corresponding to the computer program or at least one of the suite of programs of claim 25.

A computer readable storage medium storing a computer program or at least one of suite of
30 computer programs according to claim 25.